

Comment on hess-2021-69

Anonymous Referee #1

Referee comment on "Bias-correcting input variables enhances forecasting of reference crop evapotranspiration" by Qichun Yang et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-69-RC1>, 2021

Review to Yang et al., 2021, Bias-correcting individual inputs prior to combined calibration leads to more skillful forecasts of reference crop evapotranspiration. HESSD. In this study, the authors investigated a critical issue in the forecasting of short-term reference crop evapotranspiration (ET_o) based on NWP outputs. It is getting popular that weather forecasts from NWP models are used to predict water loss through evapotranspiration. Such information is highly valuable for the effective management of water resources, particularly in arid/semi-arid regions. This investigation develops a new methodology that effectively corrects errors in ET_o forecasts, and adds extra skills to statistical calibration. I believe this new post-processing strategy could benefit future NWP-based ET_o forecasting. To improve this work, the authors should pay special attention to the following key issues:

- 1, Presentation of the results could be improved. Currently, the authors use maps to show/compare results from different model experiments. These figures could demonstrate the spatial patterns of modeling results. However, it might be more useful if the authors could summarize regional results in a different way, such as using box-plots. I believe that will better show readers the overall statistical information across the whole country than simply plotting the results as maps.
- 2, Implications for ET_o forecasting at the monthly or seasonal scales should be further discussed. ET_o forecasting based on monthly or seasonal climate forecasts from GCMs is also widely performed. This study develops the new strategy for short-term forecasts. The applicability of this method to ET_o forecasting based on GCM forecasts should be briefly discussed, to benefit a broader range of readers.

Specific comments: Line 20, rewrite this sentence. Not clear Line 74 Calibrate->calibrate Line 80 compiled as the inputsâ€¦. Line 95 10m -> 10 m. Line 107-108, need to clarify what the anomaly and climatological mean are referring to Line 165 consider rewriting this sentence. Does not read well. Line 172, what is specific month Figures in Results: shouldn't the figures be centralized? Line 360, not calibrate directly, should be without correcting forecasts of the inputs Line 365, consider rewriting this sentence Line 377-378, two "calibration models" consider to rewrite Line 385, in the calibrated forecasts Line 386, consider making it shorter and clearer

Please also note the supplement to this comment:

<https://hess.copernicus.org/preprints/hess-2021-69/hess-2021-69-RC1-supplement.pdf>